# Mobile Applications Development 2
# Design Document

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## Purpose of this document

This document is intended to provide a background of the application and the purpose of it. It provides a walkthrough of the design with notes about the user experience included. This document serves as the basis of implementation and records services and technologies that are used to achieve the development of the application.

## Overview

This application will allow users to translate any text they enter. They will also be able to read in a document and translate the entire document. The app will also possibly be able to recognise text via the device's camera and be able to recognise the user's voice.

## System Characteristics

- Operates in real time.
- Provides a user-friendly UI and experience.
- Allow multiple users to use the application at once.
- Allow users to enter text to translate.
- Allows users to read in a file from their device and translate the document.
- Utilises sensors/technologies well, aiding in the user experience.

## Research on similar technologies

There are several technologies/applications that are similar in nature to the application described in this document. Such technologies/applications include Google Translate, iTranslate, SayHi, TextGrabber, and Microsoft Translator:

- ***Google Translate***

**Google Translate** is a free multilingual machine translation service developed by Google, to translate text. Google Translate supports over 100 languages at various levels. Google Translate allows users to enter various pieces of text, and then translate that text into the desired language. Rather than translating languages directly, it first translates text to English and then to the target language. During a translation, it looks for patterns in millions of documents to help decide on the best translation.

- ***iTranslate***

**iTranslate** is an application that allows one to translate text and full websites. iTranslate supports over 100 languages, like Google Translate. When downloaded on a supported device, iTranslate acts as a plugin when browsing websites, allowing the user to translate the entire page at the touch of a button. iTranslate also has voice recognition, allowing the user to speak a certain word/sentence and have it translated into a desired language.

- ***SayHi***

**SayHi** is an app that allows users to have conversations with other users. The app translates one user's input into the other user's primary language on the fly – for example if one user was typing in English and another user was typing in Spanish, the app would perform like a traditional chat app but with the extra feature of translating each person's input into the other person's desired language. The app also supports speech-to-text. The app supports over 90 languages and dialects. In addition to this, the user can customise the apps text-to-speech feature – they can adjust the speed of the male/female voice, for example.

- ***Text Grabber***

**Text Grabber** is another language translator app. Unlike the other apps described here, this app primarily works with images. The app can also capture text from live video streams. Text recognition/translation is also performed on the device itself, meaning no internet connection is required. Due to it primarily working with images, the app makes it very easy for the user to capture text and translate it – the app is able to capture text from an image without needing to take a picture. The app also stores previously recognised/translated text.

- ***Microsoft Translator***

**Microsoft Translator** is a free, personal translation app for 60+ languages, to translate text, voice, conversations, camera photos and screenshots. It also allows you to download languages for offline translation. There is a feature that allows camera translation to translate text within photos and screenshots. There is also voice translation to translate speech, and a split-screen mode for two participants having a bilingual conversation.

## Project Scope

The aim and objectives of this project is to develop a project that will allow multiple users to enter text to translate and choose the desired language to translate the text into. The user can also read in files from anywhere on their device and translate that text. The user will also possibly be able to recognise text via their devices camera and possibly be able to translate words that the user themselves speak via voice recognition.

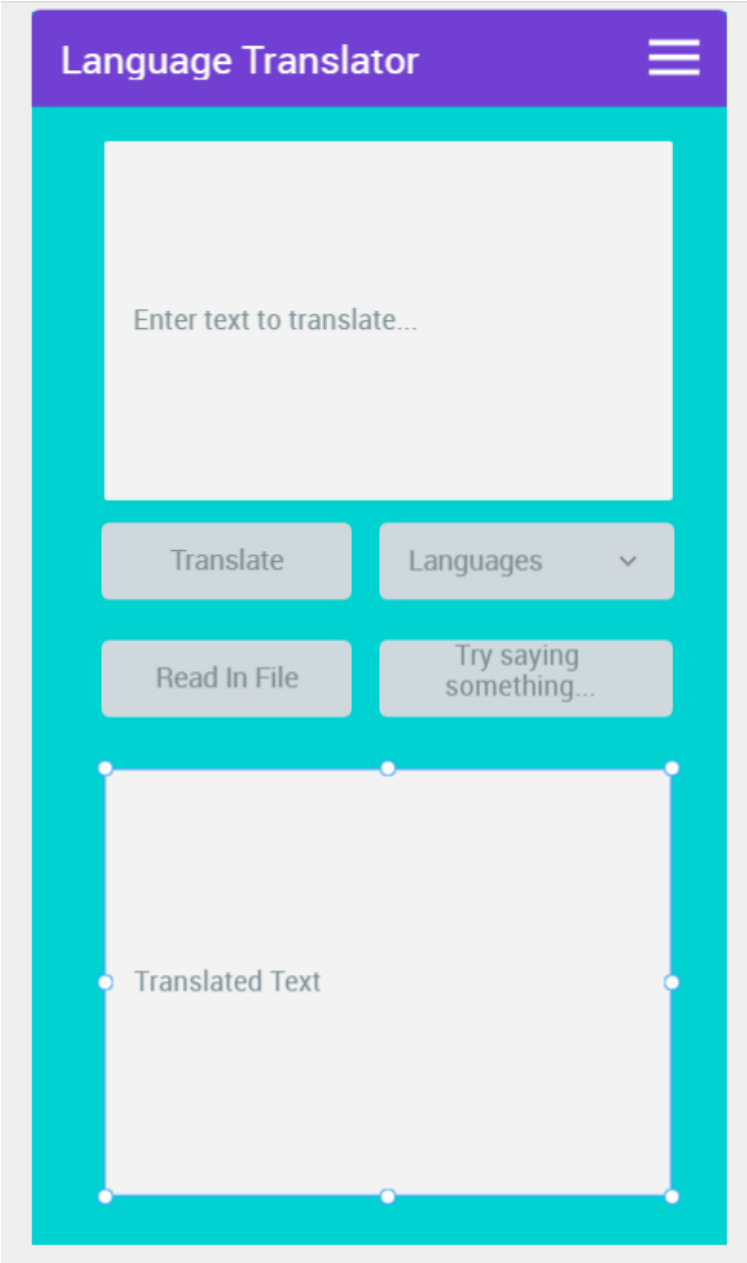
## Tools used throughout the project

To develop this application, several technologies will be used. These include but are not limited to:

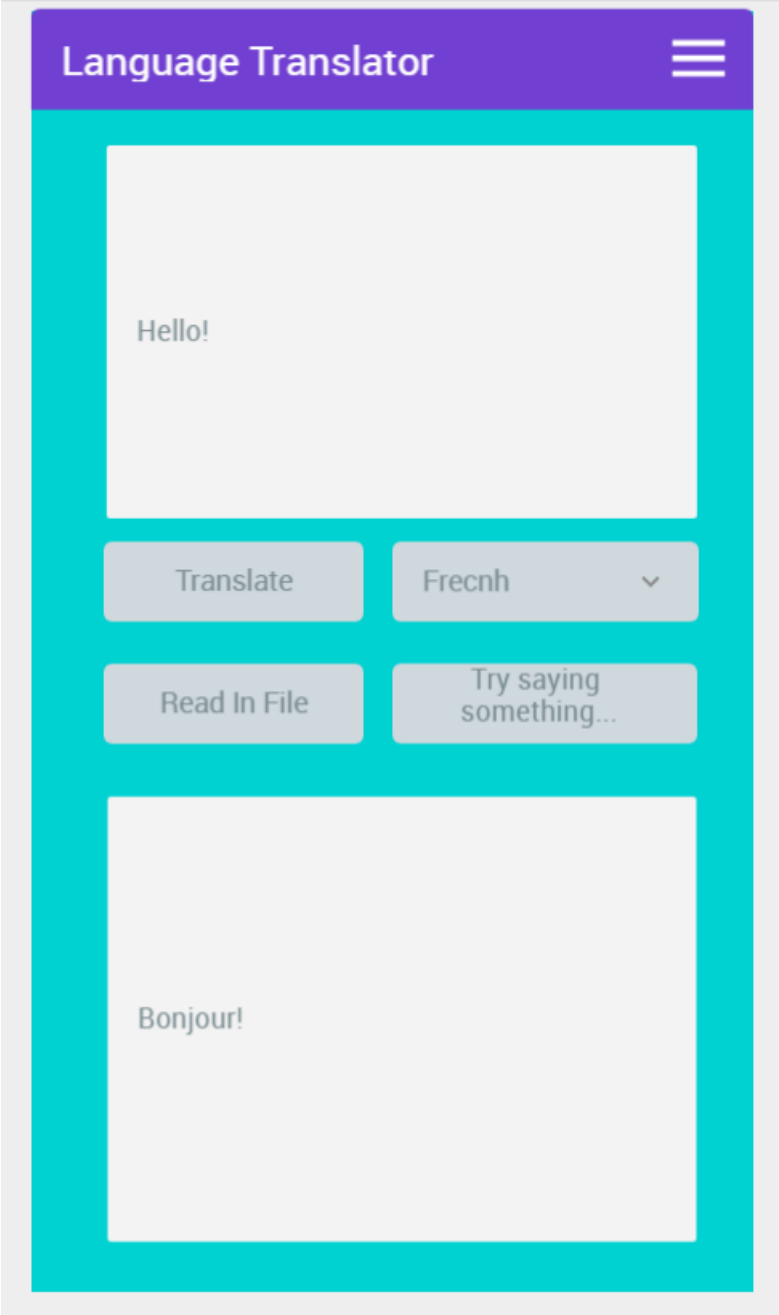
- C# - The application will primarily be written using this language.
- Visual Studio 2017 – This IDE will be used to develop and deploy the application.
- Yandex Translate – The API that will be used to recognise and translate text.
- Various plugins will be used throughout the project. These include but are not limited to – Newtonsoft, FilePicker, Camera.Android, etc.

## UI Showcase

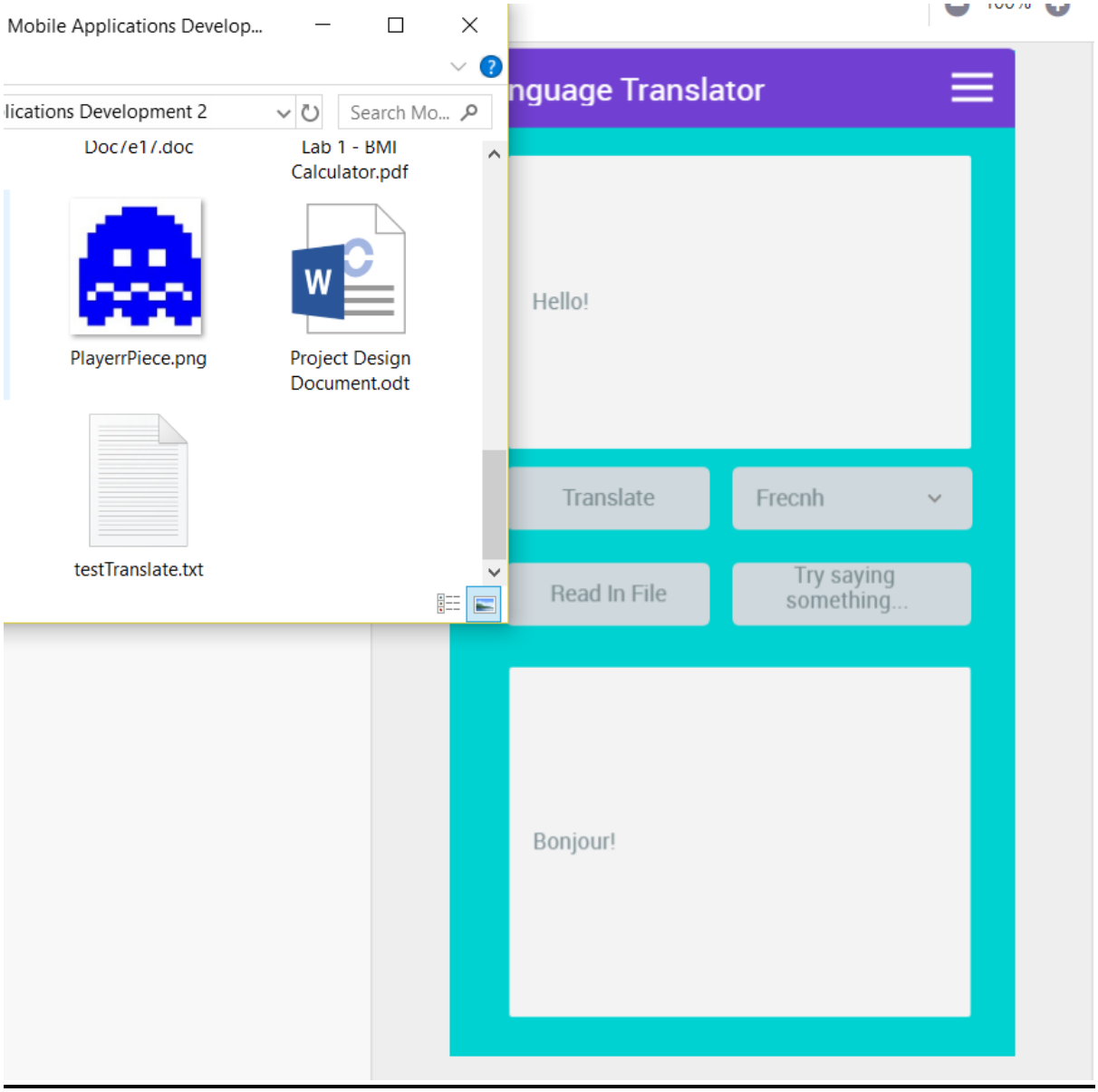
The below showcases what the UI will look like, and shows the main features of the app.




*Basic application UI*




*Translation of text*




*File Picker functionality*

## Feasibility of development

Based on the capabilities of C#/Visual Studio 2017, and taking into account what needs to be done to develop the application, most, if not all, of the application should be able to be developed in the required time frame. The most likely problem to occur would be getting voice recognition to work properly as even mainstream voice recognition software today still has problems recognising users voices, depending on the way the user pronounces certain words. The option to recognise text from images might also not work properly – the main area of concern would being able to recognise text written by hand by the user.

## Potential selling points of application

Like the above-mentioned technologies that are similar in nature to the proposed application, the application would have several selling points. These include, but not limited to: the ability to translate text as desired, the ability to translate a document, the ability to utilise voice recognition to translate from one language to another, the ability to use image recognition and translate text from an image.

## Analysis of problem domain

Here, the problem domain of the project/application is discussed. This includes analysing some of what the application needs to accomplish and ways of going about it.

The project needs to be user-friendly and have an easy-to-navigate UI. This can be accomplished through good design and user feedback.

The project also needs to allow users to enter in text and translate text into a desired language with high accuracy. The app also needs to allow users to read in files and translate the document into a desired language. Assuming voice/image recognition is able to be implemented, the app would also need to allow the user to utilise their device's microphone/camera functionality and translate text via those methods.